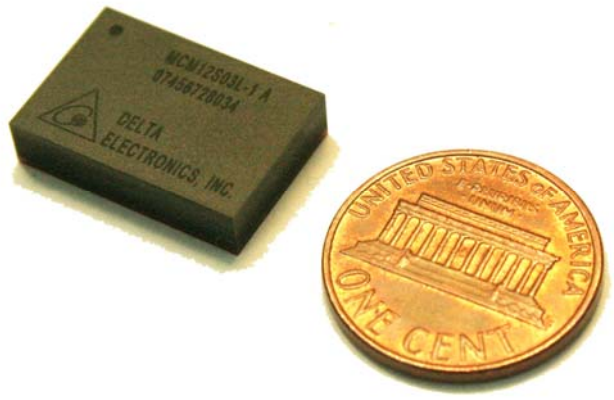
# DELPHI SERIES




## FEATURES

- Fully integrated point-of-load DC/DC converter for low component count solutions
- Small footprint and low profile : 18.6 mm x 12.5 mm x 4.2 mm (0.732" x 0.492" x 0.165")
- Input voltage range : 7V ~ 13.2V.
- 3A DC output current
- Output adjustable 0.6V to 2.5V (no power good) or 0.8V to 2.5V (with power good)
- Monotonic startup into normal and pre-biased loads
- Power good function (power good model)
- Fast transient response
- Enable Function
- Mositure Sensitivity Level (MSL) 3
- Lead free reflow process compatible

## Integrated, Non-Isolated, Point of Load, DC/DC Power Modules: 7~13.2Vin, 0.6-2.5V/ 3Aout

The MCM12S03L, 7V~13.2V input, single output, fully integrated non-isolated point of load DC/DC converter is the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc. This product family provides up to 3A of output current or 7.5W of output power in a compact, very low profile, miniature, IC-like, very easy to use, molded package. It is highly integrated and requires very few external components to provide the point-of-load function. The back of the module is in close contact with the internal heat dissipation components which provide excellent thermal performance. These converters hence possess outstanding electrical and thermal performance, as well as extremely high reliability under highly stressful operating conditions. Operating over the input voltage ranges 7V to 13.2V, the MCM12S03L supports an output voltage range from 0.6V to 2.5V (with no power good) or 0.8V~2.5V (with power good), set by a single resistor. The MCM12S03L is packaged in a thermally enhanced, compact (18.6mm x 12.5mm), and low profile (4.2mm) over-molded package suitable for automated assembly by standard surface mount equipment. The MCM12S03L is lead free process compliant.

## APPLICATIONS

- UMPC
- Server
- Industrial PC and Equipment
- Point of Load Regulation
- Other General Purpose Step Down DC/DC
- PCI Express Graphical Processing Unit

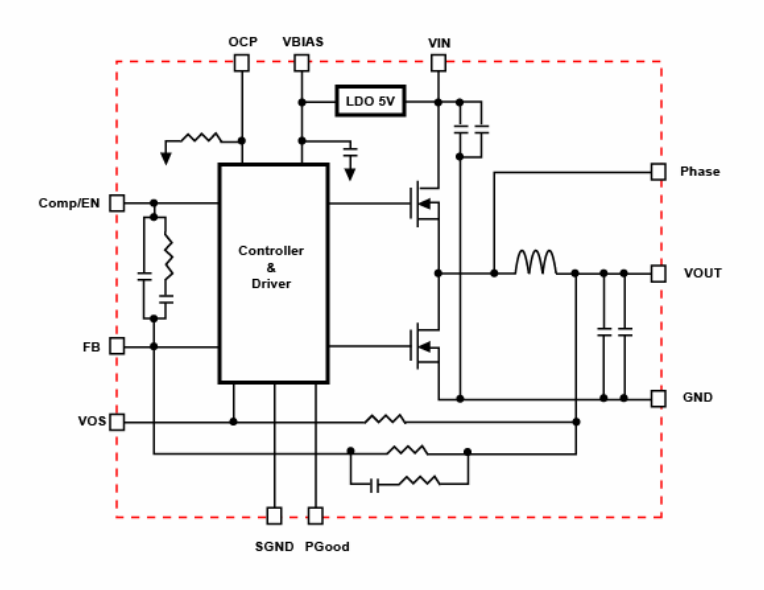
## SPECIFICATIONS

| GENERAL SPECIFICATIONS | | | OUTPUT SPECIFICATIONS | | |
|---|---|---|---|---|---|
| **Input Voltage** | Typical | 7V ~ 13.2Vdc | **Voltage Accuracy** | Typical | 2% |
| **Switching Frequency** | Typical | 600KHz | **Voltage Adjustment** | Typical | 0.8V~2.5 V or 0.6V~2.5 V |
| **Turn-on time** | Typical | 20 mS | **Line Regulation** | Typical | 0.2% |
| **Size** | | 18.6mm × 12.5mm × 4.2mm | **Load Regulation** | Typical | 0.2% |
| | | (0.732" x 0.492" x 0.165") | **Ripple & Noise** | Typical | 65 mV (3A) |

## MODEL LIST

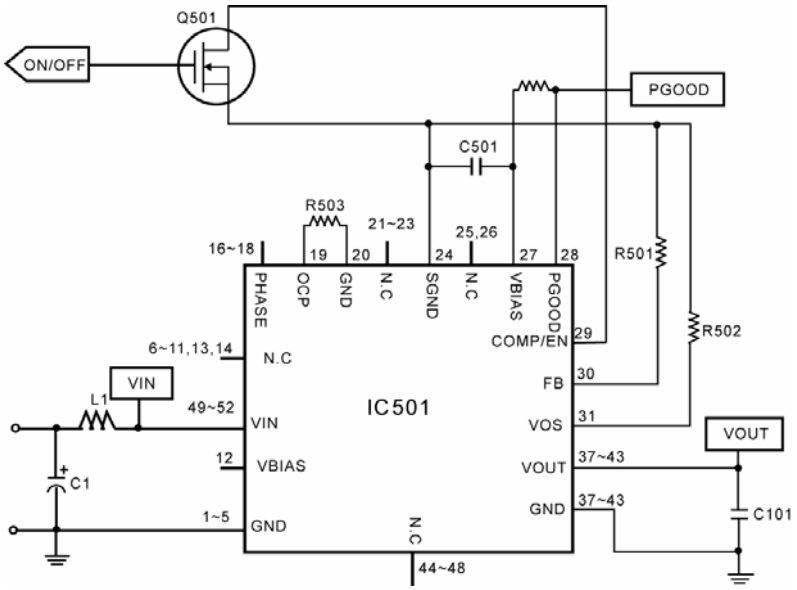
| Model Name | Input Voltage | Output Voltage | Output Current | With Power Good | Efficiency 12Vin, 2.5Vo, full load |
|---|---|---|---|---|---|
| MCM12S03L A | 7 ~ 13.2Vdc | 0.6V ~ 2.5Vdc | 3A | No | 87% |
| MCM12S03L-1A | 7 ~ 13.2Vdc | 0.8V ~ 2.5Vdc | 3A | Yes | 87% |

## SIMPLIFIED BLOCK DIAGRAM

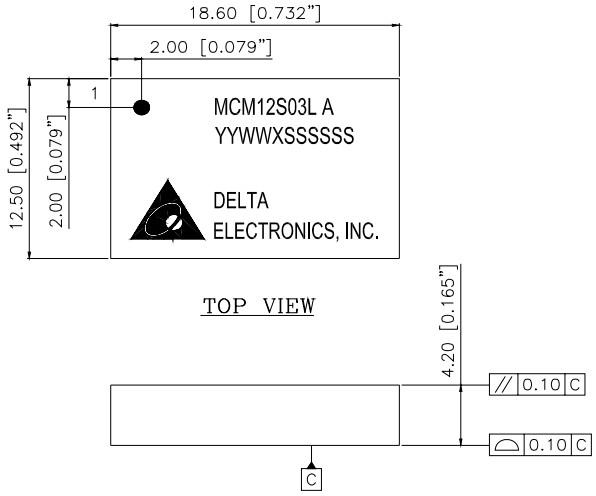



## REFERENCE CIRCUITRY FOR GENERAL APPLICATION

**For 7V ~ 13.2V**



## MECHANICAL DRAWING




NOTES:
1.DIMENSIONS ARE IN MILLIMETERS AND (INCHES)
2.TOLERANCES: X.Xmm±0.5mm(X.XX in.±0.02 in.)
X.XXmm±0.25mm(X.XXX in.±0.010 in.)

| PIN | SYMBOL | DESCRIPTION |
|---|---|---|
| 1 | GND | Power GND |
| 2 | GND | Power GND |
| 3 | GND | Power GND |
| 4 | GND | Power GND |
| 5 | GND | Power GND |
| 6 | N.C | |
| 7 | N.C | |
| 8 | N.C | |
| 9 | N.C | |
| 10 | N.C | |
| 11 | N.C | |
| 12 | Vbias | Bias supply |
| 13 | N.C | |
| 14 | N.C | |
| 15 | Test point | |
| 16 | Phase | Phase node |
| 17 | Phase | Phase node |
| 18 | Phase | Phase node |
| 19 | OCP | OCP set point |
| 20 | GND | Power GND |
| 21 | N.C | |
| 22 | N.C | |
| 23 | N.C | |
| 24 | SGND | Signal GND |
| 25 | N.C | |
| 26 | N.C | |
| 27 | Vbias | Bias supply |
| 28 | N.C | |
| 29 | Comp/EN | Dual function, E/A output and enable module |
| 30 | FB | Feedback Input |
| 31 | N.C | |
| 32 | GND | Power GND |
| 33 | GND | Power GND |
| 34 | GND | Power GND |
| 35 | GND | Power GND |
| 36 | GND | Power GND |
| 37 | VOUT | Output Voltage |
| 38 | VOUT | Output Voltage |
| 39 | VOUT | Output Voltage |
| 40 | VOUT | Output Voltage |
| 41 | VOUT | Output Voltage |
| 42 | VOUT | Output Voltage |
| 43 | VOUT | Output Voltage |
| 44 | N.C | |
| 45 | N.C | |
| 46 | N.C | |
| 47 | N.C | |
| 48 | N.C | |
| 49 | VIN | Input Voltage |
| 50 | VIN | Input Voltage |
| 51 | VIN | Input Voltage |
| 52 | VIN | Input Voltage |

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## WARRANTY

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